

CLAIMS

1. A β -lactam acylase
which is produced by a microorganism belonging to the
5 genus Stenotrophomonas.

2. A β -lactam acylase
which is produced by the Stenotrophomonas maltophilia
KNK12A strain.

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3. A gene
which contains a DNA coding for a protein comprising
an amino acid sequence identical or substantially identical
with the amino acid sequence shown under SEQ ID NO:2.

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4. A gene
which contains a DNA coding for a protein in which
the 204th methionine in the amino acid sequence shown under
SEQ ID NO:2 is substituted with valine.

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5. A gene
which contains a DNA coding for a protein in which
the 204th methionine in the amino acid sequence shown under
SEQ ID NO:2 is substituted.

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6. A gene
which contains a DNA coding for a protein comprising
an amino acid sequence in which one or a plurality of amino
acids in the amino acid sequence shown under SEQ ID NO:2
30 have undergone deletion, substitution or addition and
having β -lactam acylase activity.

7. A gene
which contains a DNA coding for a protein in which
35 the amino acid sequence shown under SEQ ID NO:2 is modified

after translation and having β -lactam acylase activity.

8. A gene

5 which contains a DNA in which the base sequence
corresponding to the site coding for the amino acid
sequence shown under SEQ ID NO:2 in the base sequence shown
under SEQ ID NO:1 codes for the amino acid sequence
identical with the amino acid sequence shown under SEQ ID
NO:2.

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9. The gene according to any one of Claims 3 to 8
which is isolated from a microorganism belonging to
the genus Stenotrophomonas.

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10. A microorganism

which produces a protein comprising an amino acid
sequence identical or substantially identical with the
amino acid sequence shown under SEQ ID NO:2 and belongs to
the genus Stenotrophomonas.

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11. A polynucleotide

25 which contains a base sequence coding for a protein
comprising an amino acid sequence identical or
substantially identical with the amino acid sequence shown
under SEQ ID NO:2.

12. A polynucleotide

30 which contains a base sequence coding for a protein
in which the 204th methionine in the amino acid sequence
shown under SEQ ID NO:2 is substituted with valine.

13. A polynucleotide

35 which contains a base sequence coding for a protein
in which the 204th methionine in the amino acid sequence
shown under SEQ ID NO:2 is substituted.

14. A polynucleotide
which contains a base sequence coding for a protein
comprising an amino acid sequence in which one or a
5 plurality of amino acids in the amino acid sequence shown
under SEQ ID NO:2 have undergone deletion, substitution or
addition and having β -lactam acylase activity.
15. A polynucleotide
10 which contains a base sequence coding for a protein
in which the amino acid sequence shown under SEQ ID NO:2 is
modified after translation and having β -lactam acylase
activity.
- 15 16. A polynucleotide
which contains a base sequence in which the base
sequence corresponding to the site coding for the amino
acid sequence shown under SEQ ID NO:2 in the base sequence
shown under SEQ ID NO:1 codes for the amino acid sequence
20 identical with the amino acid sequence shown under SEQ ID
NO:2.
- 25 17. A polynucleotide
which contains the base sequence shown under SEQ ID
NO:1.
18. The polynucleotide according to any one of
Claims 11 to 17
which is isolated from a microorganism belonging to
30 the genus Stenotrophomonas.
19. A protein
which comprises an amino acid sequence identical or
substantially identical with the amino acid sequence shown
35 under SEQ ID NO:2.

20. A protein
which comprises an amino acid sequence in which the
204th methionine in the amino acid sequence shown under SEQ
5 ID NO:2 is substituted with valine.

21. A protein
which comprises an amino acid sequence in which the
204th methionine in the amino acid sequence shown under SEQ
10 ID NO:2 is substituted.

22. A protein
which comprises an amino acid sequence in which one
or a plurality of amino acids in the amino acid sequence
15 shown under SEQ ID NO:2 have undergone deletion,
substitution or addition and having β -lactam acylase
activity.

23. A protein
20 in which the amino acid sequence shown under SEQ ID
NO:2 is modified after translation and having β -lactam
acylase activity.

24. A gene
25 which contains a transcription regulatory sequence
contained in the gene according to any one of Claims 3 to 9.

25. A gene
which contains a translation regulatory sequence
30 contained in the gene according to any one of Claims 3 to 9.

26. The gene according to any one of Claims 3 to 9
under the control of regulon containing a transcription
and/or translation regulatory sequence,
35 wherein either or both of said regulatory sequence(s)

is (are) substituted with other transcription and/or translation regulatory sequence each obtainable by the same or different living organism.

5 27. A recombinant vector
 which comprises at least one of the gene according to
Claim 3, 4, 5, 6, 7, 8, 9, or 26.

 28. A transformant
10 which is obtainable by transforming a host with the
recombinant vector according to Claim 27.

 29. The transformant according to Claim 28,
 wherein the host is a gram-negative microorganism.

15 30. The transformant according to Claim 28,
 wherein the host is a gram-positive microorganism.

 31. The transformant according to Claim 28
20 which is pUCNTkmTn5-KNK-L/HB101 (FERM BP-8362).

 32. The transformant according to Claim 28
 which is pUCNTTn5-MuKNK-L1/HB101 (FERM BP-8369).

25 33. A method of producing a β -lactam acylase
 which comprises culturing the transformant according
to any one of Claims 28 to 32, and recovering a β -lactam
acylase produced by said transformant.

30 34. A β -lactam acylase
 which comprises an amino acid sequence coded by the
polynucleotide according to any one of Claims 11 to 18.

 35. An immobilized β -lactam acylase
35 which is obtainable by culturing the microorganism

according to Claim 10 or the transformant according to any one of Claims 28 to 32, and immobilizing the cell, cell-mixed culture, cell disrupted product, or a β -lactam acylase extracted and/or purified from the cell.

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36. A method of producing a β -lactam acylase in a transformant or of enhancing the production

which comprises preparing the recombinant vector according to Claim 27, transforming a host with said
10 recombinant vector, cloning the obtained transformant, and selecting.

37. A method of producing a β -lactam antibiotic by using the β -lactam acylase according to Claim 34.

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38. The method according to Claim 37,
wherein the β -lactam antibiotic is amoxycillin.

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